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Metropolitan Life Insurance Co.

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RESULTS OF THE TREATMENT FOR OVERWEIGHT

The self-discipline required to maintain a permanent reduction of weight is evidently too severe for most overweights, who, generally, are inclined to self-indulgence. Such is the conclusion which may be drawn from the results of a course in weight reduction for its overweight employees, conducted by the Metropolitan Life Insurance Company under the supervision of Dr. HAYNES H. FELLOWS, Assistant Medical Director of the Company. Beginning in 1923, overweight employees at the Home Office of the Company were given the opportunity to attempt to reduce weight under the guidance of a physician. There were 294 employees, who took advantage of this offer. The treatment consisted almost entirely of dietary restriction, combined with carefully directed exercises. In a few cases thyroid extract was used for a short time. At the end of the course in reduction, which lasted from a few weeks to several months, according to the individual, 237, or 81 per cent. of the employees, had lost weight, but 19 per cent. showed no reduction. For those who did lose, the average reduction was fifteen pounds. About one-seventh of the group, mostly among those excessively overweight, lost thirty pounds or more.

To determine the end results of the weight reducing instructions, these employees were followed up for five years after the completion of treatment. At the end of the first year there were 224 of the original 294 available for examination. Only 32 per cent. had continued to lose weight; on the average they had lost ten pounds during treatment and four pounds during the year after treatment. The majority, however, had regained weight; these employees had lost during treatment an average of 16.9 pounds, but regained during the following year an average of 9.7 pounds, or over half the amount lost during treatment. On the other hand, it was true, generally, that the

least gain during the first year was shown by those who lost most during treatment and by those who were most overweight.

At the end of the fifth year, the results are as follows: Of 193 persons whose records were available, only 21 per cent. showed a further loss of weight five years after treatment. This group had lost an average of ten pounds during treatment and nine pounds more in the ensuing five years. The rest, who had lost an average of sixteen pounds during treatment, regained eighteen pounds in the ensuing five years, or over ten per cent. more weight than they had lost during treatment.

There was, however, one distinctly favorable outcome of this experiment. In the original group of 294 were 33 persons with some serious physical impairment, mostly hypertension, and heart disease with hypertension. Of these, seventeen were better clinically and symptomatically five years after treatment for overweight, than before treatment. In the cases with hypertension, there has been uniformly an appreciable fall in the blood pressure. It is significant that all but two of these persons have maintained a considerably lower weight.

Another valuable by-product of this experiment was the collection of data on the build of the parents of these overweights. These data are indicative of the influence of heredity on build. Of the 588 parents of these overweight employees, no less than 296, or 50 per cent. were also overweight. In seventy cases or nearly one-fourth of the total, both parents were overweight. The incidence of overweight was much greater among mothers than among fathers. Of mothers whose weights were known, 61 per cent. were overweight, compared with only 47 per cent. of the fathers.

The facts relating to the parents of these employees also demonstrate the high incidence of degenerative disease common to overweights. No less than 32 or 5.4 per cent. of the parents had died or were ill of diabetes. In three families both father and mother were affected. The number of women with the disease was particularly large—21 cases or 7 per cent. of all the mothers, compared with only 11 or 3.7 per cent. of the fathers. Heart and renal diseases were also noted in a large number of the parents, 57 mothers and 58 fathers, or nearly 20 per cent. of the total. In twelve families both parents had organic heart disease or some form of chronic cardiorenal disease.

Altogether, the results of this course in weight reduction have encouraging as well as discouraging features. On the favorable side, it has been shown that it is easy for overweight individuals, under super-

vision, to carry out a weight reduction program which is successful in bringing down their weight appreciably without impairing their efficiency or health. Furthermore, overweight individuals who reduce their weight by a considerable amount consistently reported a subjective improvement in their physical condition. A third important benefit was the distinct relief of the symptoms in those overweights who were afflicted with high blood pressure and organic heart lesion. It is rather discouraging, on the other hand, to find that, out of a large group of otherwise normal people, the weight reduction program, which was successfully carried out under medical supervision, was not maintained after the supervision was removed. It would appear, then, that continued medical guidance is necessary, if the excellent results obtained during treatment are to be maintained.

CYCLES IN PNEUMONIA

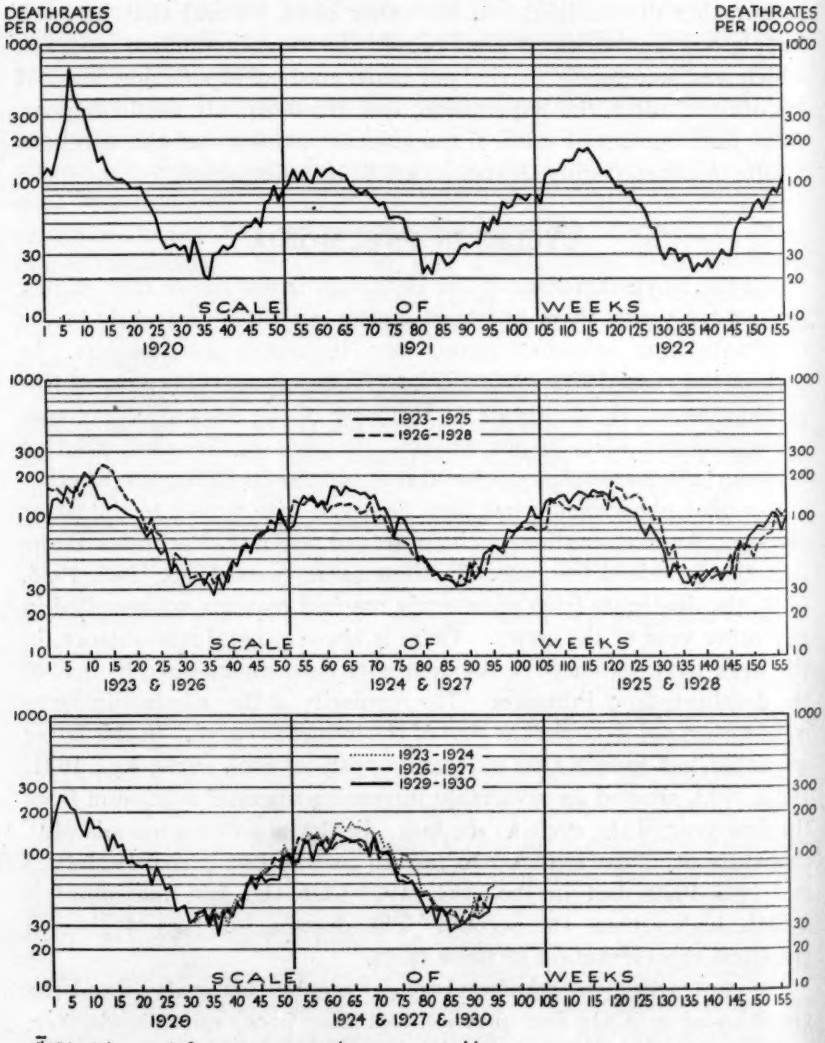
In the November issue of the BULLETIN it was shown that, during the last ten years, there had been a clear-cut three-year cycle in the deathrate from influenza among our Industrial policyholders. In each of the years 1920, 1923, 1926, 1929, and in no other year of this period, the weekly deathrate at the peak of the seasonal curve rose above 100 per 100,000 per annum. In view of the close relation between influenza and pneumonia, it is of interest to inquire whether any similar phenomenon has been observed with regard to the latter disease. An examination of the observed series of deathrates shows that this is indeed the case. In these same years, 1920, 1923, 1926, 1929, the deathrate from pneumonia reached maxima not equalled in any other year of the series. There is also a general resemblance, in the week-by-week curve of the deathrate from pneumonia, to that of the deathrate from influenza. The regularity of the pneumonia curve is, however, not so perfect as that of the influenza curve. In this latter we noted last month that successive years of each cycle, *e.g.*, 1921, 1922, 1923, showed an invariably increasing seasonal maximum from the first year of the cycle to the last. In the case of pneumonia also, this state of affairs is found to prevail for the two cycles 1921-1923 and 1927-1929; but in the cycle 1924-1926 the first maximum is a little higher than the second. The drawing on page 4 gives a graphical representation of these facts.

In contrasting the relations brought out by this analysis and the graph based on it, the first question that arises in our minds is whether, perhaps, the periodicity shown in the pneumonia deathrate is not simply a reflection of that already noted in the case of influenza. For,

THREE-YEAR PERIODICITY OF PNEUMONIA

*Deathrates*per 100,000 among Industrial Policyholders of the Metropolitan Life Insurance Company Jan.1920-Oct.1930*

LOGARITHMIC SCALE



*Week-by-week figures expressed on an annual basis

Metropolitan Life Insurance Company

it is well known that pneumonia is very commonly a terminal condition in influenza, and it is therefore easily possible that cases set down simply as pneumonia actually started as influenza, which either was not observed at all, or was not set down in the death certificate. However this may be, it is certain that the seasonal variation of the two diseases is very similar, the crest of the curve both for influenza and for pneumonia coming usually at about the ninth or tenth week of the year, that is, in late winter, though the ascending limb of the wave starts usually toward the close of the preceding year. The duration of the wave is also about the same for the two diseases. The range of the fluctuations is much greater in the deathrate from influenza than in that from pneumonia. Thus during the entire period of ten years here recorded, the annual maximum in the deathrate from pneumonia ranged from 126 per 100,000 in the tenth week of 1921, to 678 per 100,000 in the seventh week of 1920. The annual maximum of the deathrate from influenza, on the other hand, ranged from 20 per 100,000 in the eleventh week of 1921 to 441 per 100,000 in the seventh week of 1920. This is, of course, in accordance with the familiar fact that pneumonia has at all times a high case-fatality rate, while the case-fatality rate of influenza is much more variable, and has a disconcerting way of mounting to a high figure during a bad epidemic.

NEWER METHODS IN THE CLASSIFICATION OF FATAL ACCIDENTS

The Metropolitan Life Insurance Company has attempted on various occasions since 1920 to contribute to the development of methods which would lead to the economical production of effective data on fatal accidents. Data on where, when and how the annual accident toll of close to a hundred thousand lives arises each year in the United States are urgently needed, because successful efforts toward accident prevention depend in large measure on a foundation of plain facts. Heretofore, the data resulting from compilation methods rooted in the International List of Causes of Death have not yielded the information necessary for preventive activity. Better data are in prospect, however. Beginning with the 1929 revision of the List, more and better descriptive material will become available on the American accident problem. Over the past year, the Metropolitan's Statistical Bureau has been experimenting with the latest revision of the List in order to secure the maximum of pointed, informing facts for preventive purposes from the material entering into the mortality experience of its Industrial Department.

The International Commission which makes decennial revisions of the International List, changed, at its 1929 conferences, the very basic principle which, theretofore, had governed the classification of deaths from accidents. Up to that time, the basis was the general *locale*, that is, the place, the industry, or the general environment of the injury in which a death occurred, rather than the actual *immediate means* of the fatal injury. From now on, the primary basis of classification is to be the kind or immediate means of the injury. For example, up to 1930, the death of a miner from asphyxiation in a mine was classified as one due to a mining accident; beginning with 1930, this same death will be allocated to "accidental absorption of poisonous gases;" likewise, a death due to a fall from an automobile was formerly tabulated as an automobile fatality; from now on, it will be allocated to "accidental traumatism by fall." Division A of the first table shows how 8,811 accidental deaths of Metropolitan Industrial policyholders, during the first nine months of 1930, had to be assigned to conform to the new stipulations of the International List, *i.e.*, according to the immediate, or proximate means of injury.

Obviously, however, some method had to be devised to compile current and future data in such a way that they will be comparable with those for years prior to 1930. Otherwise it would be impossible to trace the effects, if any, of accident prevention work since the beginning of the century. To meet this end, the International Commission stipulated that, in all countries using the *Detailed* International List, deaths from accidents should be again classified in a way to make the resulting statistics for important items like mining accidents, machinery accidents, automobile accidents, etc., comparable with those for the past. It happens, incidentally, that this second classing of general agencies of injury when related to each "immediate agency of injury" will add much information on fatal accidents not available under the older system of classification.

Division B of the table shows the distribution of these same 8,811 deaths, and the deathrates for each, according to the second classification, and makes possible comparison for these items with the facts tabulated in accordance with the standards prevailing up to and including 1929.

A third classification of fatal accidents, according to origin or locale of hazard, was also made by the Metropolitan Life Insurance Company, in accordance with its practices since 1920. With this classing available, both general and "immediate" or "proximate" modes of injury can be grouped as to whether the hazard arose in

Deathrates per 100,000 from Accidental or Unspecified Violence* (*a*) By Immediate Means of Injury; (*b*) By General Agency of Injury, and (*c*) By Locale or Origin of Hazard. Metropolitan Life Insurance Company. Industrial Department. First Nine Months of 1930.

Int'l List Number (1929 Revision)	(*a*) Immediate Means of Injury (Primary Classification) — Cause of Death	Deaths	Death-rate per 100,000
	ALL ACCIDENTAL OR UNSPECIFIED VIOLENCE	8,811	62.9
	By Immediate Means of Injury:		
176	Attack of venomous animals	7	†
177	Poisoning by food	81	.6
178	Accidental absorption of poisonous gases:	286	2.0
	Anesthesia	8	.1
	Illuminating gas	199	1.4
	Automobile carbon monoxide poisoning	28	.2
	Other poisonous gases	51	.4
179	Other acute accidental poisonings, gas excepted:	176	1.3
	Wood or denatured alcohol	33	.2
	Corrosive sublimate	21	.1
	Other poisons (or kind not stated)	122	.9
180	Conflagration	172	1.2
181	Accidental burning	686	4.9
182	Accidental mechanical suffocation	67	.5
183	Accidental submersion	1,036	7.4
184	Accidental traumatism by firearms	194	1.4
185	Accidental traumatism by cutting or piercing instruments	83	.6
186-a	Accidental traumatism by fall	1,583	11.3
186-b	Accidental traumatism by crushing, landslide	3,375	24.1
187	Cataclysm	1	†
188	Injuries by animals	22	.2
189	Hunger or thirst	1	†
190	Excessive cold	27	.2
191	Excessive heat	195	1.4
192	Lightning	13	.1
193	Accidents due to electric currents	107	.8
194	Other accidental and unspecified violence:	607	4.3
	Foreign body	37	.3
	Explosions	50	.4
	Falling objects	115	.8
	Striking against objects	27	.2
	Handling objects	12	.1
	Other accidental injuries by known means	138	1.0
	Other accidental injuries by means unknown or unspecified	228	1.6
195	Violent deaths—nature unknown	83	.6
196	Wounds of war	.....	.....
197-198	Other violence, not suicide or homicide, not classified above	9	.1

(*b*) General Agency of Injury (Secondary Classification) — Cause of Death	Deaths	Deathrate per 100,000
ALL ACCIDENTAL OR UNSPECIFIED VIOLENCE	8,811	62.9
By General Agency of Injury:		
Mines and quarries	145	1.0
Machinery (except mines and quarries):	167	1.2
Agricultural machinery	7	†
Elevator machinery	45	.3
Recreation machinery	2	†
Other machinery	113	.8
Means of transport:	3,597	25.7
Railroads:	411	2.9
Railroad and automobile collision	105	.7
Other railroad accidents	306	2.2
Street cars:	128	.9
Street car and automobile collision	54	.4
Other street car accidents	74	.5
Automobiles—primary	2,801	20.0
Motorcycles	39	.3
Other means of land transport	60	.4
Water transport	125	.9
Air transport	33	.2
Other general agencies of injury	4,902	35.0

(*c*) Origin or Locale of Hazard (Unofficial M. L. I. Co. Classification)	Deaths	Death-rate per 100,000	Per cent. of Total
ALL ACCIDENTAL OR UNSPECIFIED VIOLENCE	8,811	62.9	100.0
By Locale or Origin of Hazard:			
Person killed was:			
In gainful employment	1,181	8.4	13.4
At home	1,886	13.5	21.4
In public places:	4,715	33.7	53.5
Sport or recreation	221	1.6	2.5
Pedestrian using highway or sidewalk	1,784	12.7	20.3
Public use of public building	82	.6	.9
In or on transport facility as passenger	1,436	10.3	16.3
In other public places	1,192	8.5	13.5
Miscellaneous or not specified origin	1,029	7.3	11.7

*Deaths not certified as "suicide" or "homicide." †Less than .05.

gainful employment, in the home or in public places. It is urged that this third grouping be shown also in officially published tables on fatal accidents. The (*c*) section of our first and the (*b*) section of the second table in this note show how the origin or locale of hazard item can be used to bring out useful data for accident prevention purposes.

The second table relates solely to deaths from automobile and motor cycle injuries. It will be noted that the items 2,801 for "primary automobile injuries," and 39, for motor cycle injuries are identical with those in Section (*b*) of the first table. But, in addition,

Deaths and Deathrates from Automobile and Motorcycle Injuries (*a*) By Immediate Means of Injury and (*b*) By Origin of Hazard. Metropolitan Life Insurance Company. Industrial Department. First Nine Months of 1930.

Automobile and Motorcycle Injuries	Deaths	Per Cent. of Total Automobile and Motorcycle Deaths	Deathrate per 100,000
ALL AUTOMOBILE AND MOTORCYCLE INJURIES.	3,027	100.0	21.6
Motorcycle injuries	39	1.3	.3
Automobile carbon monoxide poisoning	28	.9	.2
Collisions with railroad trains	105	3.5	.7
Collisions with street cars	54	1.8	.4
Primary automobile injuries	2,801	92.5	20.0
PRIMARY AUTOMOBILE INJURIES:			
(*a*) *By Immediate Means of Injury*	2,801	100.0	20.0
Burning	29	1.0	.2
Submersion	24	.9	.2
Cutting or piercing	5	.2	*
Falls	69	2.5	.5
Crushing	2,656	94.8	19.0
Falling objects	4	.1	*
Person striking against objects	2	.1	*
Handling objects	1	*	*
Other means of injury	11	.4	.1
(*b*) *By Locale or Origin of Hazard*	2,801	100.0	20.0
PERSON KILLED WAS:			
Gainfully employed	137	4.9	1.0
At home			
In public places	2,663	95.1	19.0
Sport or recreation	13	.5	.1
Pedestrian using highway or sidewalk	1,376	49.1	9.8
In or on transport facility as passenger	1,110	39.6	7.9
In other public places	164	5.9	1.2
Miscellaneous or not specified origin	1	*	*

*Less than .05.

it is now shown that automobiles were a factor in the deaths of 28 persons on account of carbon monoxide poisoning, of 105 through grade crossing collisions with railroad trains or engines, and of 54 through collisions with "street-cars." The second section of this second table shows the immediate means of injury in the 2,801 deaths in "primary" automobile fatalities, while the third section shows the distribution of these same deaths according to origin of hazard.

A thorough study of the possibilities of the accident division of the new International List is urged upon vital statisticians and upon all persons interested in the factual basis of accident prevention or of accident insurance. Some progress may be made toward harmonizing the existing, independent systems now in use in the United States by both public and private statisticians. The same principles may apply to the methods in use for compiling medical and surgical statistics of injuries treated in hospital and private medical and surgical practice.

HEALTH RECORD FOR NOVEMBER, 1930

It is now safe to announce that, beyond peradventure, the year 1930 will be recorded as a year of better health conditions than have ever before been enjoyed in the United States and Canada. The exact deathrate cannot be announced until after the close of the year; but the mortality record for eleven of the twelve months has been so much better than ever before registered that only a veritable health disaster in the final month could force the year's mortality rate above the previous minimum. Up to the close of the third week of December, there was not the slightest sign of any untoward development. These conclusions are based on the mortality statistics of approximately 19,000,000 Industrial policyholders of the Metropolitan Life Insurance Company. This large group is a representative cross-section of the population of the two countries. About sixteen and one-half millions are white persons and about two and one-half millions are negroes. About one and one-quarter million are Canadians. Both sexes and every age range are fully represented.

Up to the end of November, the cumulative deathrate for these millions of people was only 8.6 per 1,000, as compared with 9.4 in 1929. Among policyholders living West of the Rocky Mountains, the rate was only 6.5 as compared with 6.8 last year; for those living in the rest of the United States, the mortality this year was 8.8 as against 9.6 in 1929; and among Canadian policyholders, this year's cumulative deathrate of 8.7 may be compared with 9.3 in 1929.

Furthermore, the month of November itself recorded a lower deathrate than did any previous November. The figure was considerably below that of 1929, not only for the policyholders considered as a group, but for those in all sections of the United States, and in Canada. The actual November deathrate was 7.7 per 1,000; the nearest approach to this figure during any previous November was 7.9—in 1924.

We have commented, in previous numbers of the STATISTICAL BULLETIN, on the chief factors which have contributed to the remarkable health record of 1930. These will be reviewed in greater detail in the January, 1931, BULLETIN when the facts for the whole year 1930 will be available. At this writing, all that need be said is that the year has been absolutely free from the widespread prevalence of any contagious or infectious disease. The 1930 influenza deathrate will be lower than in many years past. New low mortality rates will surely be established for diphtheria, tuberculosis and puerperal conditions and probably for typhoid fever, scarlet fever and diarrheal complaints. There is good prospect that 1930 will mark a break in the long series of years during which the cancer deathrate has been persistently increasing, and that there will be recorded, also, a drop in diabetes mortality for the first time since 1924. In addition, there is every prospect that the accident deathrate will be considerably below that of 1929 and possibly below any figure recorded since 1922. Even the picture for automobile fatalities is encouraging; for, up to the end of November, there was no increase over last year's figure.

A very slight rise in the homicide deathrate was in evidence up to the end of November. The single unfavorable item in the 1930 mortality statistics will be a considerable rise in the suicide deathrate.

The deathrate in the general population of the large cities of the United States in November was 11.8 per 1,000 population, as compared with 10.8 for October and 12.0 for November, 1929. More cases of diphtheria, influenza, measles, scarlet fever and smallpox were reported in November than in October, but there was lower morbidity from poliomyelitis and typhoid fever. Comparison with November, 1929, however, shows that there was an increase in poliomyelitis and typhoid fever, cases with less sickness from diphtheria, influenza, measles, scarlet fever and smallpox. These statements are based on the number of cases reported during the first four weeks of October and November, 1930, and November, 1929.

The following table shows the mortality among Industrial policyholders for November, 1930; October, 1930, and November, 1929, together with the cumulative deathrate for the first eleven months of each year.

METROPOLITAN LIFE INSURANCE COMPANY

Deathrates* per 100,000 for Principal Causes, Premium-Paying Business in Industrial Department (Annual Basis)

MONTHS OF NOVEMBER, 1930; OCTOBER, 1930, AND OF NOVEMBER, 1929

CAUSES OF DEATH	RATE PER 100,000 LIVES EXPOSED*				
	Nov. 1930	Oct. 1930	Nov. 1929	Cumulative Jan.—Nov. 1930	Cumulative Jan.—Nov. 1929
TOTAL—ALL CAUSES	765.3	810.3	806.3	863.7	938.8
Typhoid fever	2.6	4.4	2.5	2.2	2.4
Measles	.2	.3	.4	2.9	3.0
Scarlet fever	2.0	1.3	1.8	2.5	2.6
Whooping cough	2.3	2.7	3.8	4.3	5.9
Diphtheria	5.7	5.0	12.0	5.8	8.6
Influenza	10.7	6.7	13.4	14.4	43.1
Tuberculosis (All forms)	64.9	75.0	74.6	80.6	87.6
Tuberculosis of resp'y system	57.3	67.4	66.7	70.2	77.4
Cancer	71.3	82.4	75.3	76.7	77.3
Diabetes mellitus	16.1	16.9	16.9	18.1	18.5
Cerebral hemorrhage	55.4	55.7	51.6†	59.3	57.3†
Organic diseases of heart	130.1	130.4	128.6	142.5	146.6
Pneumonia (All forms)	66.6	46.5	65.4	74.9	89.0
Other respiratory diseases	9.3	9.2	9.4	10.9	12.0
Diarrhea and enteritis	19.0	38.5	15.3	20.9	21.3
Bright's disease (Chronic nephritis)	60.7	61.9	64.4	66.8	69.6
Puerperal state	8.6	10.1	11.4	11.9	13.4
Suicides	9.6	10.0	7.9	9.6	8.6
Homicides	5.8	6.9	5.5	6.5	6.4
Other external causes (excluding suicides and homicides)	53.5	59.5	63.0	61.7	64.6
Traumatism by automobiles	21.1	23.4	24.3	20.3	20.3
All other causes	171.0	187.4	183.4	191.2	200.8

*All figures in this table include insured infants under one year of age. The rates for 1930 are subject to slight correction, since they are based on provisional estimates of lives exposed to risk.
†Rate not comparable with that for 1930.

Correspondence on the subjects discussed in these BULLETINS may be addressed to: The Editor,

STATISTICAL BULLETIN,
Metropolitan Life Insurance Company,
1 Madison Avenue, New York City

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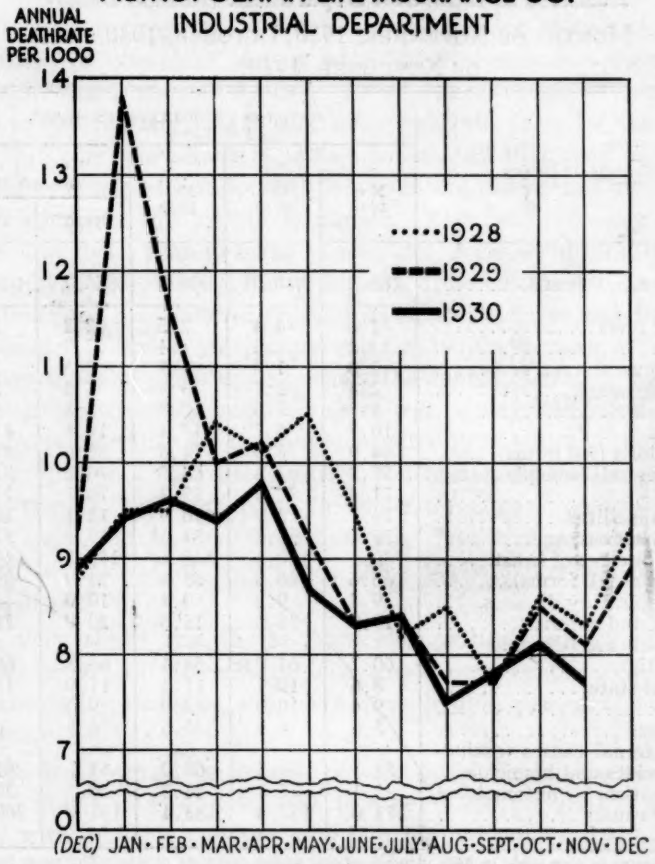
METROPOLITAN LIFE INSURANCE CO.
INDUSTRIAL DEPARTMENT



1928*	9.5	9.5	10.4	10.1	10.5	9.5	8.2	8.5	7.7	8.6	8.3	9.3
1929*	13.8	11.6	10.0	10.2	9.2	8.3	8.4	7.7	7.7	8.5	8.1	8.9
1930	9.4	9.6	9.4	9.8	8.7	8.3	8.4	7.5	7.8	8.1	7.7	

* Rates for 1928 and 1929 are final.

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